UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/033,863	12/19/2001	Aaron Raphel	11641/30	1300

26646 7590 11/26/2003

KENYON & KENYON
ONE BROADWAY
NEW YORK, NY 10004

EXAMINER	
LORENGO, JERRY A	
ART UNIT	PAPER NUMBER
1734	

DATE MAILED: 11/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/033,863	RAPHEL ET AL.	
	Examiner	Art Unit	
	Jerry A. Lorengo	1734	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *14-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *14,15,17,21-38,40 and 41* is/are rejected.

7)☒ Claim(s) *16,18-20,39,42 and 43* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 April 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4/11/02; 6/16/03
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

(1)

Election/Restrictions

Applicant's election without traverse of Group II, claims 14-43 in the response filed November 8, 2003 is acknowledged.

(2)

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 22-24 and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,378,953 to Winn.

Regarding applicant claim 22, Winn discloses a method for handing a membrane comprising the steps of (column 5, lines 9-68; column 1, lines 33-42; column 2, lines 12-19):

(1) Providing a membrane on a forming substrate;

(2) Attaching a support member (closed perimeter ring or frame) to the membrane, the support member having a rigidity which is greater than that of the membrane; and

(3) Lifting and moving (transferring) the membrane from its forming substrate with the support member and moving it to a second substrate.

Regarding applicant claims 23 and 24, Winn discloses that the support member comprises a substrate such as one carrying large quantities of data as an embodiment on the surface (column 4, lines 45-50).

Regarding applicant claim 38, Winn discloses that the step of transferring includes the step of separating the membrane from the support member (column 5, lines 20-25)

(3)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 14, 15, 17, 21-29, 30, 31, 34, 35, 38 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ostuni et al.[1] in view of U.S. Patent No. 4,378,953 to Winn.

Regarding applicant claims 14 and 22, Ostuni et al. disclose a method for the application of a pattern to a target surface comprising the steps of (Figures 2 and 3) :

(1) Applying a coating of membrane materials over a selected portion of a patterned substrate;

(2) Curing the membrane;

(3) Removing the membrane from the substrate; and

(4) Applying the membrane to a target surface; and

(5) Employing the membrane to apply a pattern to surface.

[1] Ostuni et al., "Patterning Mammalian Cells Using Elastomeric Membranes" , Langmuir, June 21, 2000.

Ostuni et al., however, do not specifically disclose the step of bonding a support member to the membrane while it is disposed on the patterned substrate and removing the membrane from the substrate with the support member.

Nonetheless, it would have been obvious to one of ordinary skill in the art at the time of invention to do so motivated by the fact that Winn, also drawn to methods for the formation of membranes on patterned substrates, including the step of removal, disclose that the bonding of a support member, such as a closed perimeter ring or frame having a relatively higher rigidity that the membrane, to the membrane after formation on the patterned support enables the membrane to be easily removed from the patterned substrate while retaining the membrane is a taut condition having a substantially uniform tension (column 5, lines 9-68; column 1, lines 33-42; column 2, lines 12-19; column 6, lines 9-17).

Although Winn does not specifically disclose that the support member is applied to the membrane before the membrane is cured, the skilled artisan would have been appreciative that doing so would enhance adhesion of the membrane to the support member and also ensure that any shrinkage of the membrane during curing is counteracted by its adherence to the support member.

Regarding applicant claims 15, 21, 24, 25 and 40, Ostuni et al. disclose that the pattern substrate includes a plurality of features thereon which define depressions and projections (claims 15 and 24) which are capable of providing the membrane formed thereon with a corresponding pattern comprising a plurality of through holes (claim 25) and wherein the membrane is used to apply a pattern to the target surface by adding additional material into the through holes (claim 21).

Regarding applicant claims 17, 23 and 38, Winn discloses that the membrane is removed from the patterned substrate (the first location) by using the support member and it moved to a second location (column 1, lines 33-42; column 5, lines 19-25).

Regarding applicant claim 26, although neither Ostuni et al. nor Winn specifically disclose that the support member is attached outside the outer perimeter of the features provided in/on the membrane, it would have been obvious to one of ordinary skill in the art at the time of invention to provide adequate clearance between the outer perimeter of the features and the inner perimeter of the support member motivated by the fact that the skilled artisan would have been

appreciative of the need not to occlude the membrane feature pattern which would subtract from the efficacy of the membrane's ability to pattern a target surface. Furthermore, invasion of the features by the support member would disturb the ability of the support member to retain the membrane in a taut condition, which Winn discloses as an important feature of its use.

Regarding applicant claims 27 and 28, Ostuni et al. discloses that the membrane is elastomeric and comprises PDMS.

Regarding applicant claim 29, Winn discloses that the support member (comprising a perimeter ring or frame) is provided with a bonding material on its surface after which the support member is applied against the membrane on the patterned substrate with the final step of curing the bonding material (column 5, line 61 to column 6, line 8).

Regarding applicant claim 30, although Winn does not specifically disclose that the bonding material comprises PDMS, it would have been obvious to one of ordinary skill in the art at the time of invention to utilize a bonding material, such as PDMS, in place of the adhesive of Winn motivated by the fact that the skilled artisan would have appreciated that bondability is often enhanced when the bonding agent is chemically or physically similar to the substrate to be bonded. Thus, when bonding the PDMS membrane of Ostuni et al. with the support member of Winn, it would have been advantageous to utilize a similar bonding material, such as a PDMS cement.

Regarding applicant claim 34, Although Winn does not specifically disclose that the support member is applied to the membrane before the membrane is cured, the skilled artisan would have been appreciative that doing so would enhance adhesion of the membrane to the support member and also ensure that any shrinkage of the membrane during curing is counteracted by its adherence to the support member.

Regarding applicant claims 31 and 35, Winn discloses that the bonding portion of the support member is treated by the application of a bonding agent prior to attaching the support member to the membrane (column 5, line 61 to column 6, line 8).

(4)

Claims 32, 33, 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as combined in section (3), above, in further view of U.S. Patent No. 5,147,397 to Christ et al.

Although Winn discloses that the bonding portion of the surface of the support member is treated by the application of a bonding agent, he does not specifically disclose, as per applicant claims 32, 33, 36 and 37, that the treatment comprises exposing the bonding surface of oxygen plasma.

Christ et al., directed to the problem of bonding dissimilar plastic adherends, teaches that plasma processing of at least one adherent improves the bond strength between them. Furthermore, the composition of the plasma gas (such as oxygen), exposure time power, and/or other parameters may be varied depending upon the equipment used and particular materials being bonded. According to Christ et al. these parameters can be readily optimized by routine experimentation (column 6, lines 50-60; column 10, lines 57-62)). It would have therefore been obvious to one of ordinary skill in the art at the time of invention to provide the support member of Winn with a surface treatment by oxygen plasma processing to increase the bondability of its bonding portions motivated by the fact that Christ et al. teaches that such a method is known to increase bondability and may be varied and optimized depending upon the equipment used and the materials to be bonded.

(5)

Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as combined in section (3), above, in further view of U.S. Patent No. 4,802,945 to Opina.

Although Winn does not specifically disclose that the support member, once adhered to the membrane, functions as a container, it would have been obvious to one of ordinary skill in the art at the time of invention that it would do so motivated by the fact that Opina, also drawn to the formation of patterned membranes having a support member applied thereto, teaches that once applied the support member functions as a container to contain the material which will bee applied to the membrane to pattern a target substrate (Figures 1-5; column 2, line 57 to column 3, line 25).

(6)

Allowable Subject Matter

Claims 16, 18-20, 39, 42 and 43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Although Winn discloses the bonding of a support member to the membrane, neither he nor any of the prior art of record specifically teaches or suggest, as per applicant claims 16 and 39, the step of removing the support member prior to the use of the membrane to pattern as target surface. None of the prior art of record specifically teaches or suggests, as per applicant claims 18-20, 42 and 43, that additional material (such elastomeric material) is applied to the top surface of the membrane after the application of the support member or the further addition of a feature to the top surface of the membrane.

(7)

Information Disclosure Statement

The information disclosure statements (IDS) submitted on April 11, 2002 and June 06, 2003 have been considered and initialized copies are attached hereto.

(8)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry A. Lorengo whose telephone number is (703) 306-9172. The examiner can normally be reached on Monday through Friday, 8:30 A.M. to 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (703) 308-3853. Please note that after December 18, 2003 the examiner can be reached at (571) 272-1233. This change is due to the relocation of Patent Office facilities to a new campus. Also note that all patent application related correspondence transmitted by FAX must be directed to the central FAX number at 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

J.A. Lorengo
Primary Examiner
AU 1734
November 21, 2003